

**WHAT IS CLAIMED IS:**

1           1. A method for an IPv6 enabled node to engage in IPv6 communication across a  
2 network containing IPv4 components, the method comprising:  
3           the IPv6 enabled node sending a query to a Domain Name System server, the  
4           query identifying the IPv6 enabled node;  
5           responsive to sending the query, the IPv6 enabled node receiving at least one  
6           identifier of at least one IPv6 connect agent from the Domain Name  
7           System server;  
8           the IPv6 enabled node determining an IPv6 connect agent to use to engage in IPv6  
9           communication across the network containing IPv4 components;  
10          the IPv6 enabled node determining an address of that IPv6 connect agent; and  
11          the IPv6 enabled node engaging in IPv6 communication across the network  
12          containing IPv4 components, using the determined address to  
13          communicate with that IPv6 connect agent.

1           2. The method of claim 1, wherein responsive to sending the query, the IPv6 enabled  
2 node further receives at least one associated attribute concerning at least one IPv6 connect agent  
3 from the Domain Name System server.

1           3. The method of claim 2, wherein:  
2           at least one received attribute comprises an address of an associated IPv6 connect  
3           agent.

1           4. The method of claim 3, wherein the IPv6 enabled node determining an address of that  
2   IPv6 connect agent comprises:

3                   gleaning the address from a received associated attribute concerning that IPv6  
4                   connect agent.

1           5. The method of claim 2, wherein:

2                   at least one received attribute comprises information concerning a physical  
3                   location of an associated IPv6 connect agent.

1           6. The method of claim 5 wherein the IPv6 enabled node determining an IPv6 connect  
2   agent to use to engage in IPv6 communication across the network containing IPv4 components  
3   comprises:

4                   the IPv6 enabled node choosing the IPv6 connect agent that is physically closest  
5                   to the IPv6 enabled node.

1           7. The method of claim 1, wherein the IPv6 enabled node determining an IPv6 connect  
2   agent to use to engage in IPv6 communication across the network containing IPv4 components  
3   comprises:

4                   responsive to the IPv6 enabled node having received exactly one identifier of  
5                   exactly one IPv6 connect agent from the Domain Name System server, the  
6                   IPv6 enabled node choosing that one IPv6 connect agent.

1           8. The method of claim 1, wherein the IPv6 enabled node determining an IPv6 connect  
2 agent to use to engage in IPv6 communication across the network containing IPv4 components  
3 comprises:

4                   the IPv6 enabled node choosing the IPv6 connect agent whose identifier the IPv6  
5                   enabled node received first.

1           9. The method of claim 1, wherein the IPv6 enabled node determining an address of that  
2 IPv6 connect agent comprises:

3                   the IPv6 enabled node sending the received identifier of that IPv6 connect agent  
4                   to the Domain Name System server; and  
5                   responsive to sending the received identifier, the IPv6 enabled node receiving the  
6                   address of that IPv6 connect agent from the Domain Name System server.

1           10. The method of claim 1, wherein:

2                   the query sent by the IPv6 enabled node to the Domain Name System server  
3                   comprises an Internet Protocol address.

1           11. The method of claim 1, wherein:

2                   the query sent by the IPv6 enabled node to the Domain Name System server  
3                   comprises a Media Access Control address.

1           12. The method of claim 1, wherein:

2                   the query sent by the IPv6 enabled node to the Domain Name System server  
3                   comprises a character string.

1           13. A method for a Domain Name System server to provide to an IPv6 enabled node an  
2 address of an IPv6 connect agent, the method comprising:

3                   the Domain Name System server receiving a query from an IPv6 enabled node,

4                   the query identifying the IPv6 enabled node;

5                   responsive to the Domain Name System server receiving the query, the Domain

6                   Name System server determining at least one identifier of at least one IPv6

7                   connect agent; and

8                   the Domain Name System server sending to the IPv6 enabled node at least one

9                   identifier of at least one IPv6 connect agent.

1           14. The method of claim 13, wherein the Domain Name System server determining at  
2 least one identifier of at least one IPv6 connect agent comprises:

3                   using the entire received query as a key to find a record in a lookup table.

1           15. The method of claim 13, wherein the Domain Name System server determining at  
2 least one identifier of at least one IPv6 connect agent comprises:

3                   using a portion of the received query to find a record in a lookup table.

1           16. The method of claim 13, further comprising:

2                   the Domain Name System server sending to the IPv6 enabled node an associated

3                   attribute concerning at least one IPv6 connect agent.

1           17. The method of claim 16, wherein:

2                   at least one attribute comprises an address of an associated IPv6 connect agent.

1 18. The method of claim 16, wherein:

2 at least one associated attribute comprises information concerning a physical  
3 location of an associated IPv6 connect agent.

1 19. The method of claim 13, further comprising:

2 the Domain Name System server sending to the IPv6 enabled node at least one  
3 name of at least one IPv6 connect agent; and  
4 the Domain Name System server receiving a name of a desired IPv6 connect  
5 agent from an IPv6 enabled node.

1 20. The method of claim 19, wherein the Domain Name System server determining at  
2 least one identifier of at least one IPv6 connect agent comprises:

3 using the received name of the desired IPv6 connect agent to find a record in a  
4 lookup table; and  
5 gleaned from the found record an identifier of an IPv6 connect agent to send to  
6 the IPv6 enabled node.

1 21. The method of claim 13, wherein the Domain Name System server determining at  
2 least one identifier of at least one IPv6 connect agent comprises:

3 using a Naming Authority Pointer Domain Name System resource record.

1 22. The method of claim 13, wherein the query received by the Domain Name System  
2 server comprises an Internet Protocol address.

1           23. The method of claim 13, wherein the query received by the Domain Name System  
2 server comprises a Media Access Control address.

1           24. The method of claim 13, wherein the query received by the Domain Name System  
2 server comprises a character string.

1           25. A system for an IPv6 enabled node to engage in IPv6 communication across a  
2 network containing IPv4 components, the system comprising:

3                   a software portion configured to send a query to a Domain Name System server,

4                           the query identifying the IPv6 enabled node;

5                   a software portion configured to receive at least one identifier of at least one IPv6

6                           connect agent from the Domain Name System server, responsive to having

7                           sent the query;

8                   a software portion configured to determine an IPv6 connect agent to use to engage

9                           in IPv6 communication across the network containing IPv4 components;

10                  a software portion configured to determine an address of that IPv6 connect agent;

11                           and

12                  a software portion configured to engage in IPv6 communication across the

13                           network containing IPv4 components, using the determined address to

14                           communicate with that IPv6 connect agent.

1           26. The system of claim 25, further comprising a software portion configured to receive  
2 at least one associated attribute concerning at least one IPv6 connect agent from the Domain  
3 Name System server, responsive to having sent the query.

1        27. The system of claim 26, wherein:

2                at least one received attribute comprises an address of an associated IPv6 connect  
3                agent.

1        28. The system of claim 27, further comprising:

2                a software portion configured to glean the address from a received associated  
3                attribute concerning that IPv6 connect agent.

1        29. The system of claim 25, further comprising:

2                a software portion configured to send the received identifier of that IPv6 connect  
3                agent to the Domain Name System server; and  
4                a software portion configured to receive the address of that IPv6 connect agent  
5                from the Domain Name System server, responsive to having sent the  
6                received identifier.

1        30. A system for a Domain Name System server to provide to an IPv6 enabled node an  
2        address of an IPv6 connect agent, the system comprising:

3                a software portion configured to, responsive to the Domain Name System server  
4                receiving a query from an IPv6 enabled node, the query identifying the  
5                IPv6 enabled node, determine at least one identifier of at least one IPv6  
6                connect agent; and  
7                a software portion configured to send to the IPv6 enabled node the least one  
8                identifier of the least one IPv6 connect agent.

1       31. The system of claim 30, further comprising:

2               a software portion configured to send to the IPv6 enabled node an associated  
3               attribute concerning at least one IPv6 connect agent.

1       32. The system of claim 31, wherein:

2               at least one attribute comprises an address of an associated IPv6 connect agent.

1       33. The system of claim 30, further comprising:

2               a software portion configured to send to the IPv6 enabled node at least one name  
3               of at least one IPv6 connect agent; and  
4               a software portion configured to receive a name of a desired IPv6 connect agent  
5               from an IPv6 enabled node.

1       34. The system of claim 33, further comprising:

2               a software portion configured to use the received name of the desired IPv6  
3               connect agent to find a record in a lookup table; and  
4               a software portion configured to glean from the found record an identifier of an  
5               IPv6 connect agent to send to the IPv6 enabled node.

1       35. A computer readable medium containing a computer program product for an IPv6  
2       enabled node to engage in IPv6 communication across a network containing IPv4 components,  
3       the computer program product comprising:

4               program code for sending a query to a Domain Name System server, the query  
5               identifying the IPv6 enabled node;



6 program code for receiving, responsive to sending the query, at least one identifier  
7 of at least one IPv6 connect agent from the Domain Name System server;  
8 program code for determining an IPv6 connect agent to use to engage in IPv6  
9 communication across the network containing IPv4 components;  
10 program code for determining an address of that IPv6 connect agent; and  
11 program code for engaging in IPv6 communication across the network containing  
12 IPv4 components, using the determined address to communicate with that  
13 IPv6 connect agent.

1 36. The computer readable medium of claim 35, the computer program product further  
2 comprising:

3 program code for receiving, responsive to sending the query, at least one  
4 associated attribute concerning at least one IPv6 connect agent from the  
5 Domain Name System server.

1 37. The computer readable medium of claim 36, wherein:

2 at least one received attribute comprises an address of an associated IPv6 connect  
3 agent.

1 38. The computer readable medium of claim 37, the computer program product further  
2 comprising:

3 program code for gleaned the address from a received associated attribute  
4 concerning that IPv6 connect agent.

1           39. The computer readable medium of claim 35, the computer program product further  
2 comprising:  
3           program code for sending the received identifier of that IPv6 connect agent to the  
4           Domain Name System server; and  
5           program code for receiving, responsive to sending the received identifier, the  
6           address of that IPv6 connect agent from the Domain Name System server.

1           40. A computer readable medium containing a computer program product for a Domain  
2 Name System server to provide to an IPv6 enabled node an address of an IPv6 connect agent, the  
3 computer program product comprising:  
4           program code for determining, responsive to the Domain Name System server  
5           receiving a query from an IPv6 enabled node, the query identifying the  
6           IPv6 enabled node, the Domain Name System server, at least one  
7           identifier of at least one IPv6 connect agent; and  
8           program code for sending to the IPv6 enabled node the least one identifier of the  
9           least one IPv6 connect agent.

1           41. The computer readable medium of claim 40, the computer program product further  
2 comprising:  
3           program code for sending to the IPv6 enabled node an associated attribute  
4           concerning at least one IPv6 connect agent.

1           42. The computer readable medium of claim 41, wherein:  
2           at least one attribute comprises an address of an associated IPv6 connect agent.

1           43. The computer readable medium of claim 40, the computer program product further  
2 comprising:

3                   program code for sending to the IPv6 enabled node at least one name of at least

4                           one IPv6 connect agent; and

5                   program code for receiving a name of a desired IPv6 connect agent from an IPv6

6                           enabled node.

1           44. The computer readable medium of claim 43, the computer program product further  
2 comprising:

3                   program code for using the received name of the desired IPv6 connect agent to

4                           find a record in a lookup table; and

5                   program code for gleaning from the found record an identifier of an IPv6 connect

6                           agent to send to the IPv6 enabled node.

1           45. A system for an IPv6 enabled node to engage in IPv6 communication across a  
2 network containing IPv4 components, the system comprising:

3                   means for sending a query to a Domain Name System server, the query

4                           identifying the IPv6 enabled node;

5                   means for receiving, responsive to having sent the query, at least one identifier of

6                           at least one IPv6 connect agent from the Domain Name System server;

7                   means for determining an IPv6 connect agent to use to engage in IPv6

8                           communication across the network containing IPv4 components;

9                   means for determining an address of that IPv6 connect agent; and

10 means for engaging in IPv6 communication across the network containing IPv4  
11 components, using the determined address to communicate with that IPv6  
12 connect agent.

1 46. The system of claim 45, further comprising:

2 means for receiving, responsive to having sent the query, at least one associated  
3 attribute concerning at least one IPv6 connect agent from the Domain  
4 Name System server.

1 47. The system of claim 46, wherein:

2 at least one received attribute comprises an address of an associated IPv6 connect  
3 agent.

1 48. The system of claim 47, further comprising:

2 means for gleaning the address from a received associated attribute concerning  
3 that IPv6 connect agent.

1 49. The system of claim 45, further comprising:

2 means for sending the received identifier of that IPv6 connect agent to the  
3 Domain Name System server; and  
4 means for receiving, responsive to having sent the received identifier, the address  
5 of that IPv6 connect agent from the Domain Name System server.

1 50. A system for a Domain Name System server to provide to an IPv6 enabled node an  
2 address of an IPv6 connect agent, the system comprising:

3 means for determining, responsive to the Domain Name System server having  
4 received a query from an IPv6 enabled node, the query identifying the  
5 IPv6 enabled node, at least one identifier of at least one IPv6 connect  
6 agent; and  
7 means for sending to the IPv6 enabled node the least one identifier of the least  
8 one IPv6 connect agent.

1 51. The system of claim 50, further comprising:

2 means for sending to the IPv6 enabled node an associated attribute concerning at  
3 least one IPv6 connect agent.

1 52. The system of claim 51, wherein:

2 at least one attribute comprises an address of an associated IPv6 connect agent.

1 53. The system of claim 50, further comprising:

2 means for sending to the IPv6 enabled node at least one name of at least one IPv6  
3 connect agent; and  
4 means for receiving a name of a desired IPv6 connect agent from an IPv6 enabled  
5 node.

1 54. The system of claim 53, further comprising:

2 means for using the received name of the desired IPv6 connect agent to find a  
3 record in a lookup table; and  
4 means for gleaned from the found record an identifier of an IPv6 connect agent  
5 to send to the IPv6 enabled node